

REMARKS

Currently, claims 1-3, 6-14 and 18-26 are pending in the application, of which claims 1-3, 6-13 and 18-20 are withdrawn from further consideration. Accordingly, claims 14 and 21-26 are currently active in this application, of which claims 14 and 26 are independent.

In view of the following Remarks, Applicant respectfully requests reconsideration and withdrawal of the objections and rejections for the reasons discussed below.

Rejection of Claims under 35 U.S.C. §103

Claims 14, 21-24 and 26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U. S. Patent No. 5,852,481 issued to Hwang ("Hwang") in view of U. S. Patent No. 5,162,933 issued to Kakuda, et al. ("Kakuda") and further in view of Japanese Patent Publication No. 05241173 by Yatabe, et al. ("Yatabe"). Applicant respectfully traverses this rejection for at least the following reasons.

With respect to claims 14 and 21-24, independent claim 14 recites:

"14. A thin film transistor (TFT) panel, comprising:
an insulating substrate;
a gate wire formed on the substrate and comprising a gate line, a gate electrode and a gate pad;
a gate insulating layer covering the gate wire;
a semiconductor layer formed on said gate insulating layer;
a data wire formed on the semiconductor layer comprising a data line, a source electrode and a drain electrode;
a passivation layer formed on the data wire and the gate wire and having a first contact hole extended to the gate pad and a second contact hole extended to the drain electrode; and

a transparent conductive layer formed on the passivation layer and connected to the gate pad through the first contact hole and the data wire through the second contact hole,

wherein at least one of the gate wire and the data wire comprises a main layer and a supplemental layer, and the supplemental layer is substantially inert to an etchant used for etching the transparent layer for preventing at least one of the gate pad and the data wire from being eroded by the etchant.”

The Office Action states that the gate line and the data line of Hwang can be modified to include the teachings from Kakuda such that the gate line or the data line comprises an aluminum layer and a MoCr_x layer. As the motivation for the asserted combination of Hwang and Kakuda, the Office Action states “... decreasing shorts of the TFT and obtaining high speed of the data line and prevent the generation of hillock and remaining the surface smooth” (Office Action, Page 4).

The Office Action admits that the combination of Hwang and Kakuda does not disclose “the supplemental layer comprises metal nitride or metal alloy and being inert to an etchant for preventing the gate pad or the data wire from being eroded by the etchant” (Office Action, Page 4).

Regarding the missing feature, the Office Action states that Yatabe discloses “the material of the electrode for liquid crystal display comprising metal nitride that is a solvent-resistance layer or air permeation resistant layer” (emphasis in original) (Office Action, page 4). The Office Action asserts that the combination of Hwang and Kakuda can be further modified such that the supplemental layer of the gate or data wire is formed of metal nitride shown in Yatabe. As the motivation for the asserted combination of Hwang, Kakuda and Yatabe, the Office Action states “achieving inert

etching such as solvent-resistant/air permeation-resistance effect and a high quality display" (Office Action, page 5).

It is submitted that a prima facie case of obviousness has not been fully established because there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings at least for the following reasons.

The Office Action asserts that Hwang can be modified such that the gate line or the data line comprises an aluminum layer and a MoCr_x layer of Kakuda for decreasing shorts of the TFT, obtaining high speed of the data line and preventing the generation of hillock and maintaining the smooth surface. Thus, the supplemental layers of Hwang and Kakuda prevent the generation of hillock of aluminum or the diffusion of aluminum material into the amorphous silicon of the semiconductor. This is different from the present invention as claimed, which prevents the etchant from penetrating into the main layer.

Furthermore, Yatabe discloses that the metal nitride is deposited on the transparent sheet as the electrode for a liquid crystal display to prevent the moisture from penetrating into the transparent sheet. In the present invention as claimed, the transparent sheet is only used as the electrode for the liquid crystal display.

Moreover, the Office Action insists that Hwang discloses the gate line including the main layer and supplemental layer, Kakuda discloses the main layer including metal and the laminating layer such as MoCr_x and aluminum layer having the function of the supplemental layer, and Yatabe discloses the material of the electrode for liquid crystal display of metal nitride. However, the transparent sheet is not the metal layer.

Finally, Yatabe does not disclose that the nitride metal layer prevents the lower layer from being etched, as required by the claims. Accordingly, there is no motivation to combine Yatabe, and Kakuda or Hwang, and the Office Action's assertion is based on an impermissible hindsight combination of the references.

As there is no motivation to combine Hwang, Kakuda and Yatabe, it is submitted that the teachings of the cited references are not sufficient to render claim 14 obvious, as the Office Action has relied upon improper hindsight and the Applicant's own invention to guide the rejection. For at least these reasons, it is submitted that independent claim 14 is patentable over the cited references. Dependent claims 21-24 would be also patentable at least for the same reasons.

With respect to claim 26, this independent claim recites "wherein at least one of the gate wire and the data wire comprises a main layer and a supplemental layer, and the main layer comprises metal or a metal alloy, and the supplementary layer comprises metal nitride or metal alloy nitride".

As mentioned above, it is submitted that a prima facie case of obviousness has not been fully established because there is no suggestion or motivation for the asserted combination of the cited references. For example, there is no motivation to combine Hwang, Kakuda and Yatabe as stated above. For at least these reasons, it is submitted that independent claim 26 is patentable over the cited references.

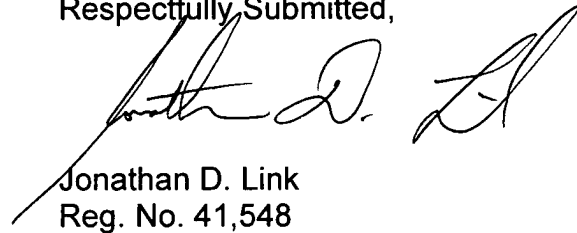
Conclusion

Applicant believes that a full and complete response has been made to the Office Action and respectfully submits that all of the stated objections and grounds for rejection have been overcome or rendered moot. Accordingly, Applicant respectfully submits that all pending claims are allowable and that the application is in condition for allowance.

Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact the Applicant's undersigned representative at the number below to expedite prosecution.

Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully Submitted,



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